

JAPANESE

[JP,2003-192966,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD
PRIOR ART EFFECT OF THE INVENTION TECHNICAL
PROBLEM MEANS EXAMPLE

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the ink composition for paints system aquosity ink jets.

[0002]

[Description of the Prior Art]As an ink composition for ink jets, although both the non-drainage system and the drainage system are used, also in it, the ink composition for aquosity ink jets has little bad smell and toxicity, and examination of the improvement in various physical properties is variously made from excelling in safeties, such as inflammability.

[0003]For example, in the case of the ink composition for color system aquosity ink jets, in order to improve drying property, use of various surface-active agents is proposed by JP,55-16042,A and JP,55-29546,A, but. It was not what the problem that the printing characteristic falls by a blot, clear

nature, etc. should produce, and it should be satisfied with this method of since ink permeates the inside of paper too much. When using a water-soluble color, a color with high solubility to water is used in many cases for the stability of ink, the water resisting property of the recorded image by an ink jet becomes low, and there is a problem also in a water resisting property and also weatherability, such as producing a blot easily, if water is poured. It is better to use paints as colorant, if it takes into consideration from the point.

[0004]However, when using paints with the ink composition for aqueous ink jets, there is a fundamental problem that dispersibility is low, and if dispersing agents, such as aqueous resin, are used in order to cancel it, problems, like drying property becomes late will arise as compared with the ink composition for color system ink jet recording. Therefore, it bleeds, and it is difficult to satisfy simultaneously the characteristic which disagrees with printing fitness, such as clear nature, drying property and the water resisting property of a recorded matter, weatherability, etc., and does not realize in conventional technology.

[0005]Since the transfer property to a recording form changes with each kinds of a recording form, when using the conventional ink composition for ink jets, the stable printing characteristic is not obtained but there is a problem that a printable recording form is limited according to the picture purpose. For example, in exclusive paper, it bleeds and the printing characteristics, such as clear nature, have a big problem in the fall of a good thing of printing speed, or the cost aspect of the exclusive paper itself. On the other hand, in the regular paper, in the cost aspect, although there is no problem, it bled and the problem that the printing characteristics, such as clear nature, fall has newly arisen. Therefore, it is the actual condition that it can bleed and the opposite characteristics, such as the printing characteristics, such as clear nature, and drying property, cannot be satisfied simultaneously.

[0006]

[Problem(s) to be Solved by the Invention]Therefore, the water resisting property of the outstanding recorded matter whose purpose of this invention is an advantage of the ink for paints system aqueous ink jets, It has weatherability and is in equivalent to a color system, or providing the ink composition for paints system aqueous ink jets excellent in printing quality, such as a lack in a blot, and clear nature, drying

property, etc. beyond it.

[0007]

[The means for solving an invention] As a result of inquiring wholeheartedly, by making the ink composition for paints system aquosity ink jets contain a certain specific compound in ink, this invention person finds out that the drying property of printed matter and printing quality become good, and came to complete this invention.

[0008]Namely, in the ink composition for aquosity ink jets in which this invention mainly comprises paints, aqueous resin, and an aquosity medium, It is related with the ink composition for aquosity ink jets making the alkylene oxide adduct of 2-butyl-2-ethyl-1,3-propanediol contain.

[0009]The content of the alkylene oxide adduct of 2-butyl-2-ethyl-1,3-propanediol of the above-mentioned statement is related with the ink composition for aquosity ink jets being 0.1 to 5 % of the weight in an ink composition.

[0010]It is related with the ink composition for aquosity ink jets, wherein the numbers of addition mols of the alkylene oxide adduct of 2-butyl-2-ethyl-1,3-propanediol of the above-mentioned statement are 2-50.

[0011]

[Embodiment of the Invention]Below, this invention is explained in more detail.

[0012]Although various kinds of inorganic matter and the organic color which can be used in the common ink for ink jet recording as paints used for the ink composition for aquosity ink jets of this invention are available, As a useful thing, especially, C. The I. pigment yellow 93, 95, 109, 110, 120, 128, 138, 151, 154, 155, 173, and 180,185,193, the C.I. pigment oranges 34, 36, 43, 61, and 71, the C.I. pigment red 122 and 202, The solid solution of 122 and 202, the C.I. pigment blue 15, the C.I. pigment violet 19, 23, and 33, the C. I. pigment black 7, etc. can be mentioned.

[0013]In the ink jet recording method, the color picture etc. are formed using the ink of eight colors which added light magenta and light blue further six colors which added an orange and green by these days on the basis of four colors of yellow, magenta, cyanogen, and black. In order to acquire such hue, also in the further above-mentioned paints, a light-fast good thing is preferred, divides, and as yellow, C. As the I. pigment yellow 138, 154, 180, and 185 and magenta, C. As the I. pigment red 122 and 202, the C.I. pigment violet 19, and cyanogen, C. as I. pigment blue 15 and black -- the C.I.

pigment black 7 -- as acidity or neutral paints, and an orange, the C.I. pigment greens 7 and 36 are more preferred especially as the C.I. pigment oranges 43, 64, and 71 and green.

[0014]In this invention, as suitable amount of the paints used, it is 0.5 to 30 % of the weight in the ink for ink jet recording, and is about 1 to 10 % of the weight more suitably. If the amount of the paints used decreases too much, the depth of shade of ink will fall, and on the other hand, if it increases too much, printing will become difficult from ink viscosity or a fluid field.

[0015]As aqueous resin used for the ink composition for aqueous ink jets of this invention, in order to distribute paints, it is desirable to use resin for pigment dispersion, and water soluble resin, water-soluble resin, anionic aqueous resin, nonionic aqueous resin, etc. can be used as resin for pigment dispersion.

[0016]Naturally-occurring polymers etc. which are generally used by the technical field in connection with this invention as water soluble resin and water-soluble resin, such as cellulose, such as methyl cellulose, carboxycellulose, and hydroxymethylcellulose, a ligninsulfonic acid salt, and shellac, can be illustrated.

[0017]The nonionic aqueous resin generally used with the art in connection with this invention as nonionic aqueous resin, such as polyvinyl alcohol, a polyvinyl pyrrolidone, and a polyethylene glycol, can be illustrated.

[0018]As anionic resin, the thing of the acid value 30 generally used by the technical field in connection with this invention - 300 mgKOH/g can be used. Specifically An acrylic-acid-alkyl-ester (meta) (meta) acrylic acid copolymer, A styrene (meta) acrylic acid copolymer, a styrene maleic acid copolymer, a styrene maleic acid-(meta) acrylic-acid-alkyl-ester copolymer, a styrene maleic acid half ester copolymer, etc. are mentioned.

[0019]As loadings of the above-mentioned aqueous resin, it is preferred to blend 0.1 to 20% of the weight into the ink composition for paints system aqueous ink jets.

[0020]As a basic compound used with the ink composition for aqueous ink jets of this invention, especially if the above-mentioned aqueous resin can be dissolved or distributed to an aqueous medium, it will not be limited, but the basic compound currently used for generally dissolving or distributing aqueous resin to an aqueous medium can be used.

For example, alkylamine, such as a butylamine and triethylamine, monoethanolamine, Hydroxide of alkaline metals, such as compounds, such as alkanolamines, such as diethanolamine and triethanolamine, morpholine, and an ammonia solution, sodium hydroxide, and a potassium hydrate, etc. are mentioned, and these may be independent, or may mix and use two or more sorts.

[0021]In the ink composition for aquosity ink jets of this invention, The alkylene oxide adduct of 2-butyl-2-ethyl-1,3-propanediol is used as an additive agent, and it is preferred as the content to blend with the ink composition for aquosity ink jets 0.1 to 5% of the weight. The alkylene oxide part in the alkylene oxide adduct of the 2-butyl-2-ethyl-1,3-propanediol used with the ink composition for aquosity ink jets of this invention Ethyleneoxide, You may be propylene oxide independence or these mixing.

[0022]In order to give ink jet recording suitability with good preservation stability, discharging stability, etc., a water soluble solvent can be made to contain in an aquosity medium in the ink composition for paints system aquosity ink jets of this invention. Specifically Lower alcohol, such as methanol, ethanol, propanol, and butanol. Ethylene glycol, propylene glycol, a diethylene glycol, The polyhydric alcohol class of dipropylene glycol, glycerin, polyglycerin, etc., Ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, Propylene glycol monomethyl ether, propylene glycol monoethyl ether, Propylene glycol acetate, diethylene glycol monomethyl ether, Polyhydric alcohol derivatives, such as dipropylene glycol monomethyl ether, Ketone, such as an ethylene oxide addition of polyglycerin, acetone, and methyl ethyl ketone. Ether, such as diethylether, isopropyl ether, a tetrahydrofuran, and 1,4-dioxane, Nitrogen containing compounds, such as ester species, such as methyl acetate, ethyl acetate, butyl acetate, lactate, butylate, epsilon-caprolactone, and epsilon caprolactam, urea, a pyrrolidone, N-methyl-2-pyrrolidone, and an octylpyrrolidone, can be used. The above-mentioned water soluble solvent may be independent, or may mix and use two or more sorts. What is necessary is just to set up the mixing ratio of water and a water miscibility solvent suitably in accordance with the characteristic of the ink for aquosity ink jets made into the purpose.

[0023]To the ink composition for paints system aquosity ink jets of this invention, various additive agents, such as a

surface-active agent, a pigment agent, a viscosity controlling agent, a defoaming agent, and an antiseptic, may be added further if needed.

[0024] Manufacture of the ink composition for paints system aqueous ink jets of this invention, Can carry out by the method generally used conventionally, for example, a surface-active agent, a pigment agent, a viscosity controlling agent, a defoaming agent, etc. are mixed paints, aqueous resin, a basic compound, an aqueous medium, and if needed, Various distribution and agitators, for example, a bead mill, a ball mill, a sand mill, It distributes using attritor, a roll mill, an agitator, a Henschel mixer, a colloid mill, an ultrasonic homogenizer, an ultra-high pressure homogenizer, a pearl mill, etc., and the method of carrying out addition mixing of the further remaining material, etc. are mentioned.

[0025] As a method of acquiring the pigment dispersion object which has desired particle size distribution as an ink composition for aqueous ink jets in this invention, The means of classifying with the after-grinding filter and centrifuge which make size of the grinding media of a dispersion machine small, which enlarge the filling factor of grinding media, which lengthen processing time can be used in independent or combination. [which make discharge velocity late] Hereafter, although this invention is explained still more concretely using the example of an examination, and an example, this invention is not limited to these.

[0026]

[Example] The following example explains the ink composition for aqueous ink jets of this invention still in detail. However, these examples are shown only in the purpose of explanation and do not limit the range of this invention. In the following statements, a "part" expresses a weight section.

[0027] Teaching 180 copies of butyl acetate to the 4 mouth flask provided with the <manufacturing method of aqueous resin> agitator, the condenser tube, and the nitrogen gas introducing pipe, heating at 100 **, and introducing nitrogen gas. 15.3 copies of methacrylic acid, 20.0 copies of stearyl methacrylate, 15.0 copies of styrene, A [of kaya ester O-50 tangent line / 7.2 copies and 46 copies of butyl acetate] mixture is dropped over 1.5 hours as 49.7 copies of benzyl methacrylate, and an initiator, After carrying out copolymerization for 2 hours, maintaining at the temperature furthermore, it distilled under decompression of a solvent and

the weight average molecular weight 10,000, acid value 100 mgKOH/g, and the solid copolymer resin with a glass transition temperature of 67 ** were obtained. The mixed solution of 7.5 copies of triethylenediamines and 62.5 copies of water was added, 30 copies of this solid copolymer resin was stirred, and the copolymer-resin solution (30% of solid content) was obtained.

[0028]71.5 copies of water was added to 13.5 copies of <adjustment of paints milling base ink> copolymer-resin solutions, it mixed, and the resin varnish for pigment dispersion was adjusted, and 15 copies of paints (the pudding textile 80, Degussa AG make) were added further, it milled with the wet circulation mill after stirring mixing, and base ink was obtained.

[0029]The base ink obtained by the above-mentioned method by the combination shown in the <adjustment of ink jet recording liquid> table 1, Stirring mixing of the alkylene oxide adduct of glycerin, n-propanol, and 2-butyl-2-ethyl-1,3-propanediol and the water was carried out, and the ink jet recording liquid of Examples 1-3 and the comparative examples 1 and 2 was obtained.

[0030]

[Table 1]

	実施例			比較例	
	1	2	3	1	2
ベースインク	40.0	40.0	40.0	40.0	40.0
グリセリン	15.0	15.0	15.0	15.0	15.0
ノルマルプロパノール	5.0	5.0	5.0	5.0	5.0
2ブチル2エチル1,3プロパンジオールエチレンオキサイド4モル付加物	1.0	2.0	3.0	—	10.0
水	39.0	38.0	37.0	40.0	30.0
合 計	100.0	100.0	100.0	100.0	100.0

[0031]It printed on the recording form Xerox L using the commercial ink jet printer (MJ-830C, a piezo type, made in SEIKO EPSON) using the ink jet recording liquid created by the printing method above of <quality assessment of printed matter> 1. ink jet recording liquid.

[0032]2. The valuation method below the valuation method of printed matter estimates printed matter, and the result is

shown in Table 2.

[0033]

[Table 2]

		実施例			比較例	
		1	2	3	1	2
記録液の評価	印字濃度	B	A	A	C	C
	乾燥性	B	A	A	B	A
	フェザリング	A	A	B	C	C

[0034]- The concentration of the poor part of printing density printed matter was measured by Macbeth reflection density meter RT-918, and it evaluated based on the following standard.

[Valuation basis]

A: The thing B in which a concentration value exceeds 1.20 : a concentration value exceeds 1.15, 1.20 or less thing C: concentration value exceeds 1.10, and 1.15 or less thing D: concentration value is 1.10 or less thing. [0035]- Finger touch was carried out immediately after printing of a drying ink-jet-recording station, and drying property was evaluated based on the following standard from time until recording ink stops adhering to a finger.

[Valuation basis]

The thing C dried within 5 seconds exceeding thing B:2 seconds dried within A:2 seconds: What is not dried even if it exceeds 5 seconds [0036]- The feathering line pattern was printed, it compared with the sample defined beforehand, and visual evaluation was performed.

[Valuation basis]

A: feathering -- thing B: which is not most -- thing C: with feathering -- what has many feathering [0037]

[Effect of the Invention]As mentioned above, as an example and a comparative example are given and it was shown concretely, the ink jet recording liquid of this invention is excellent in a water resisting property and weatherability, is located in a line with a color system, or can obtain the printed matter with good printing quality, such as lack in a blot, and clear nature, drying property, etc. beyond it.

[Translation done.]

